

CORE DESCRIPTIONS

COLORADO OIL SHALE

Corehole: OM3-74 (635' - 679.5')

635' -

644.3' Low-grade oil shale; broken zones at 636.5' - 638.0', "ground up" white soft tuff at 637.5', high angle fractures 640.6' - 641.1', approximately 35° fracture at 643.0', approximately 1' core loss 636.5' - 638.0' (actually 636.5' to approximately 639.0'), parting planes at 636.4', 640.0', 640.6', 641.1', 642.0', 642.7', 643.5', 641.6', low angle fractures (approximately 20°) at 639.4' and 639.6', parting planes at 643.9' and 644.2'.

644.3' -

644.6' Siltstone; grey coarse silt, carbonaceous, minor pyrite blebs, firm to brittle, slightly calcareous, argillaceous, very poor porosity and permeability.

644.6' -

645.4' Very low-grade oil shale.

645.4' -

646.6' Siltstone as at 644.3' - 644.6'.

646.6' -

647.4' Very low-grade oil shale.

647.4' -

648.5' Siltstone as at 644.3' - 644.6', but with thin very low-grade oil shale stringers; 2 high angle fractures (approximately 65°) at 647.5' - 647.9'.

648.5' -

652.7' Very low-grade oil shale to barren marlstone; 0.1' siltstone layer 651.8 - .9', parting plane at 650.5', approximately 70° fracture 652.4 - 652.7'.

652.7' -

653.2' Siltstone as at 644.3' - 644.6'.

653.2' -

653.4' Very low-grade oil shale to barren marlstone; approximately 50° fracture 653.2 - 653.4'.

653.4' -

654.3' Interbedded siltstone as 644.3' - .6' and very low-grade oil shale and marlstone.

654.3' -

657.9' Siltstone; as at 644.3' - 644.6', high angle fracture (approximately 60°) at 654.4 - .6', 654.7 - .9', 655.0 - .2', 655.5'.

CORE DESCRIPTIONS

COLORADO OIL SHALE

Corehole: OM3-74 (679.5' - 913.3') (1011.5' - 1120')

679.5' -
679.9'

Sandstone.

679.9' -
681'9"

Medium-grade oil shale; parting planes at 680'2", 681'4", 681'5", 60° fracture at 681'3".

681'9" -
686'10"

Barren Marlstone to very low-grade oil shale; parting planes at 682'3", 684'0", 684'6".

686'10" -
687'9"

Medium-grade oil shale; parting plane at 687'3".

687'9" -
694'6"

Low-grade oil shale; calcite healed 20° fracture at 687'11", tuff stringers less than ¼" thick at 690'4", 690'10", 693'0", 694'4".

694'6" -
698'4"

Very low-grade oil shale; 30° fracture at 695'0", 75° fracture at 695'7" - 696'0", brown bitumen impregnated tuffs 696'8" - 696'11" and 697'7" - 698'4", parting plane at 698'0".

698'4" -
704'7"

Low to very low-grade oil shale; parting plane at 699'6", 20° fracture at 700'4" (was calcite healed), less than ½" thick bitumen impregnated tuff at 701'11", 70° fracture at 704'5".

704'7" -
711'7"

Barren marlstone to very low-grade oil shale; 60° fracture 704'7" - 8", 60° fracture 705'5" - 705'9", parting planes at 704'11", 705'5", 705'9", 709'0", 711'0".

711'7" -
714'6"

Low-grade oil shale; parting planes at 711'11", 712'9", 713'10", 714'9", 715'1", 715'5", 715'9", 716'2", 717'7", 717'11", 718'3", 718'10", 719'7", 719'11", 720'4", 720'10", 721'5", 722'0", 722'3", 723'3", 723'6", 4 high angle fracture (were calcite healed) at 715'8" - 716'7", 60° fracture 718'0" - 2", 70° calcite healed fracture 719'9" - 720'0", 60° fracture 722'6" - 8", 60° fracture 723'6" - 8".

724'6" -
729'9"

Low to medium-grade oil shale; parting planes at 724'10", 729'4", 729'5", 45° fracture at 724'10", 75° fracture at 728'8" - 729'3", 45° fracture at 729'2" - 3".

- 778' -
784' Approximately 2.5' recovered of medium to high-grade oil shale;
- 784' -
785.2' Medium-grade oil shale; 784.2 - 785.4' is vertical fracture.
- 785.2' -
792.0' Low-grade oil shale; white tuff stringer and parting plane at 785.7', vertical fracture 787.2' - 791.6', parting planes at 787.1', 787.5', 788.2', 788.5', 789.6', 790.1', 790.3', 791.2', 791.5', 792'.
- 792.0' -
794.0' Medium-grade oil shale; parting plane at 793.3'.
- 794.0' -
796.9' Low-grade oil shale.
- 796.9' -
799.4' High-grade oil shale; lower 6" medium to high-grade.
- 799.4' -
804.9' Low-grade oil shale; parting plane at 804.3', light brown tuff at 802.6 - 802.8'.
- 804.9' -
805.9' Medium-grade oil shale.
- 805.9' -
813.4' Low-grade oil shale; nearly vertical fracture 807.9 - 809.8', 75° fracture 809.8 - 810.3', broken zone 808.5 - 808.9' due to high angle fracture and parting planes, parting planes at 808.1', 809.9', 810.0', 811.2', 45° fracture 811.3 - 811.5', 50° fracture at 812.7 - 812.9'.
- 813.4' -
815.8' High-grade oil shale.
- 815.8' -
823.2' Low-grade oil shale; 75° fracture 815.7 - 816.2', parting planes at 817.4', 818.4', 818.6', 818.9', 70° to vertical fracture at 817.6' - 818.4', 70° to vertical fracture at 818.2' - 818.9', fractures are coated with pyrite crystals.
- 823.2' -
826.3' High-grade oil shale; medium-grade in lower 4".
- 826.3' -
833.2' Low-grade oil shale; 75° fracture 828.3 - 828.5', 65° to vertical fracture 830.3 - 831.5', 80° fracture 831.8 - 832.9', 80° fracture 832.0 - 833.7', parting

- 871.4' -
873.3' Very low-grade oil shale; 80° fracture 871.4 - 872.0', 80° fracture 871.9' - 872.8', parting planes at 872.0', 872.3', 872.8', 873.2', broken pieces at 871.4' due to partings and close spaced high angle fractures.
- 873.3' -
903.5' Low-grade oil shale; (some very low-grade 878.2 - 882.5'), parting plane at 875.0', ½" gray tuff at 874.6', parting plane at 878.3', 1" light brown tuff 876.2 - 876.3', dark brown tuff 879.0 - 879.5', parting plane 880.9', tuffaceous zone 885.2' - 885.5' (3 tuff beds), (NOTE: 885.6' = 884.5 drillers depth: below this point use drillers depth), parting plane at 888.0' at ½" brown tuff, parting plane at 892.8', parting plane at 893.3', 50° fracture at 893.1 - 893.3', 75° fracture 893.8' - 894.4', vertical fracture 894.0 - 897.4', tuff less than ½" thick at 895.3', 897.3', 897.5', 80° fracture 902.5', parting planes at 902.4' and 902.5'.
- 903.5' -
907.8' Low to medium-grade oil shale.
- 907.8' -
909.8' Low-grade oil shale.
- 909.8' -
913.3' Very low-grade oil shale to barren marlstone; parting planes at 910.9', 911.5', 911.7', 911.9', 912.0', 912.2', 912.6', 912.8', dark tuff 912.9' - 913.0', broken zone 912.6 - 912.8'.
- (913.3' (Box #53) - 1011.5' (Box #62) not described).
- 1011.5' -
1022.0' Low-grade oil shale; parting planes at 1012.4', 1012.7', 1014.0', ½" white tuff bed at 1017.2', parting plane at 1017.5'.
- *Mahogany Marker 1018.0' - 1018.5'; parting plane at 1018.9'.
- 1022.0' -
1030.5' Medium-grade, some medium to high-grade, oil shale; parting plane at 1022.4' (-4' bed?), 60° fracture 1023.2 - 1023.6', parting plane with minor slicken sides at 1029.1', parting plane at 1030.2', parting plane at 1030.5'.
- 1030.5' -
1043.0' High to very high-grade oil shale; parting planes at 1030.6', 1030.5', 1032.8(?), 1034.0', 1037.2', 1038.3' (was healed with calcite), 1039.9', 1040.4', 65° fracture 1040.4 - 1040.8', low angle (approximately 15°) and parting plane at 1042.8'. fracture

- 1074.4' -
 \ 1077.0' Medium-grade oil shale; 40° fracture at 1074.8',
 parting plane at 1075.7', 55° fracture at 1076.3',
 healed solution breccia zone 1076.4 - 1077.0'
 healed with calcite.
- \ 1077.0' -
 \ 1081' Low to medium-grade oil shale; parting planes at 1079.6'
 and 1080.0' were healed with calcite.

Samples For Strength Tests

1016.1 - 1017.2' Above mine zone
 1031.0 - 1032.1' Corellative sample
 1052.6 - 1053.5' High to medium grade sample
 1078.7 - 1079.6' Low-grade sample
 1044.9 - 1045.8' Random sample (medium-grade)
 1082.5 - 1083.5' Barren to low-grade (below mine zone)

- \ 1081' -
 1082.5' Low to medium-grade oil shale; parting at 1082.5'.
 (1082.5 - 1083.5' missing - strength sample)
- \ 1083.5' -
 1085.3' Medium-grade oil shale; vertical fracture and 70°
 fracture at 1084.5', parting at 1085', 1083.8', 45°
 fracture at 1084'.
- \ 1085.3' -
 1091.0' Low to medium-grade oil shale; healed near vertical
 joints at 1086', parting at 1087', 1088.5', 2cm tuff
 bed at 1090.2' (solution cavities at 1090.8).
- \ 1091' -
 1092' Medium-grade oil shale; laminated, fractures at 1091.2'
 (pyrite).
- \ 1092' -
 1094' Low-grade oil shale; parting at 1093.7', 1093, 1092.5'.
- \ 1094' -
 1094.5' Medium-rich oil shale; laminated, parting at 1094.5'
 (pyrtie).
- \ 1094.5' -
 1095.5' Low to medium-grade oil shale; parting at 1094.8'
 1095'.
- \ 1095.5' -
 1097' Medium-grade oil shale; laminated, parting at 1095.7',
 1096.2', 50° fracture at 1096.8'.
- 1097' -
 1100' Medium-grade oil shale; 60° fractures at 1097.4',
 1097.7', 1098.2', 1100', parting at 4cm intervals
 from 1098 - 1100'.